

A FURTHER COLLECTION OF SIPHONAPTERA OBTAINED BY
MR. F. SHAW MAYER IN EASTERN NEW GUINEA

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(With 13 text-figures.)

THE collection recorded in Nov. Zool. xxxiv, pp. 55-61 (1933), was made by Mr. F. Shaw Mayer in the Krätke Mts., towards the upper reaches of the Markham R., whereas the present collection was obtained in 1936 on the Bubu R., an affluent of the Waria R. in former British New Guinea, on the northern side of the Owen Stanley range of mountains, the mammals being procured at altitudes varying from 5,500 to 7,000 ft. Forty-four specimens of fleas were found, the difficulties of obtaining the hosts alive or not much handled by the native hunters employed being very great. I am much indebted to Mr. F. Shaw Mayer for all the trouble he has taken in collecting the fleas and for the careful labelling of the tubes. Four of the 10 species collected are new, one of them representing a new genus allied to *Stivalius*, and of a fifth Mr. Shaw Mayer found the hitherto unknown male together with a small series of females. Where both sexes of a new species are available, the type selected is a male.

1. *Pulex irritans* L. 1758.

Saiko, Bubu R., 5,500 to 7,000 ft., ix.x, on Bandicoot, *Pogonomys*, and *Dactylonax*, a small series; the fleas probably got on to the mammals while these were in the hands of the natives.

2. *Alaopsylla papuensis* Jord. 1933 (text-fig. 57).

Saiko, Bubu R., 5,500 to 6,000 ft., ix., on *Pogonomys* (prehensile-tailed rat), 1 ♂, 5 ♀♀.

Described from 2 ♀♀. The genitalia of the ♂ prove that the species is nearest to *Xenopsylla vexabilis* Jord. 1925 and allies, with the ventral arm of sternum IX ribbon-like. Dorsal longitudinal groove of occiput (♂) nearly as in *X. astia* Roths. 1911, its ventral outline upcurved at apical third. Vestige of eye a little more distinct in ♂ and some of the ♀♀ than in the other ♀♀. Process P¹ of genitalia of ♂ (text-fig. 57) with the anterior dorsal bristle nearly as long as the apical one; the ventral tooth of penis-tube a little shorter than in *X. vexabilis meseris* Jord. 1936; otherwise the genitalia as in that flea.

3. *Ctenocephalides felis orientis* Jord. 1925.

Saiko, Bubu R., 7,000 ft., xi., on *Echidna*, 1 ♂.

The natives obtain *Echidna* with the help of dogs, which explains the accidental occurrence of this flea on that animal.

4. *Acanthopsylla enderleini* Wagner 1933.

Saiko, Bubu R., 5,500 ft., xi., on *Distoechurus*, 1 ♂, 8 ♀♀.

5. *Stivalius novaeguineae* Roths. 1904.

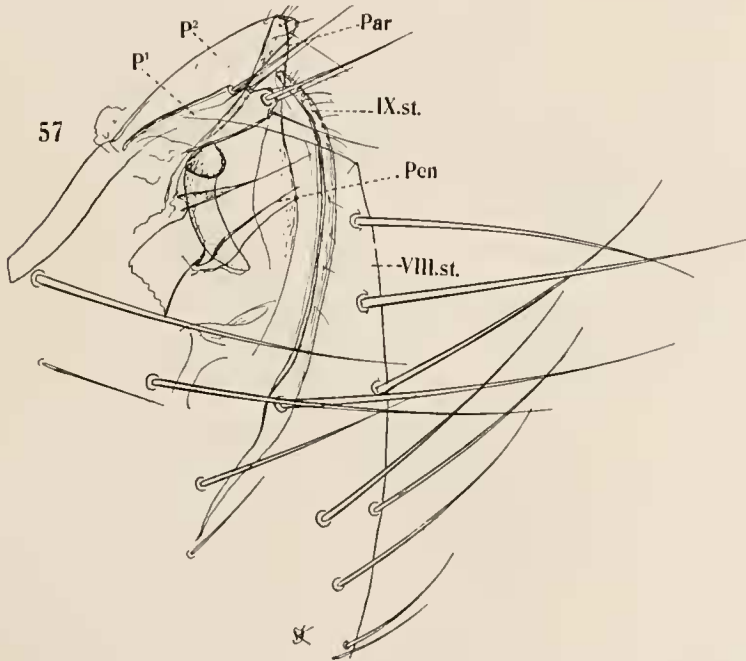
Bubu R., 6,000-7,000 ft., x., on Grey Phalanger, 1 ♀.

6. *Stivalius ancisis* sp. nov. (text-figs. 58, 59).

Saiko, Bubu R., 5,500 ft., x., on *Petaurus*, 1 ♀.

Not a typical *Stivalius*, but fits better into this genus than into *Pygiopsylla*. A small species, with the eye smaller than usual.

Head dorsally and frontally almost gradually rounded-slanting, without indication of an angle; on frons three rows of bristles and in front of eye a single bristle: 5, 4, 4, 1, besides several small bristles on side, upper bristle of second and third row large, second of third row small; on occiput (each side) three



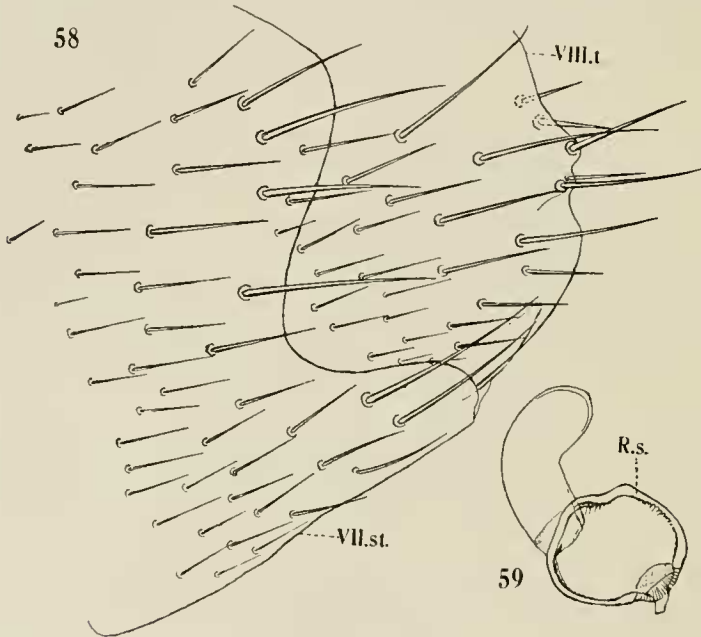
rows and a large bristle between second and third row: 5, 7, 1, 5 (not counting the small bristles of third row), above antennal groove from base of groove to apex about 12 small bristles. Segment I of maxillary palp as long as II. Proboscis not quite reaching to apex of forecoxa, with 5 segments to the palp, last one longer than III + IV. Eye almost circular, its horizontal diameter half the length of the transverse diameter of club of antenna, pale sinus very small. Club of antenna one-half longer than broad.

On pronotum a posterior row of 13 bristles and an anterior row of 8; a comb of 18 spines, most of which have a short sharp point, the spines longer than pronotum. Meso- and metanota with numerous small bristles and (on the two sides together) the former with a posterior row of 12, the latter 14. On mesopleura 10 bristles on one side of body and 12 on the other. The bristles on metepimerum 14 or 15.

Apical spines on abdominal terga: I 0, II 2, III 2, IV 1, V 0; bristles

I 48, 10, II 43, 14, III 54, 16, IV 56, 17, V 65, 16, VI 63, 18, VII 55, 8. Bristles on sterna: III 41, 13, IV 29?, 10, V 26, 12, VI 28, 12, VII 79, 12. In both terga and sterna the numbers of the anterior bristles may not be quite exact; they have been counted several times with slightly different results, which is of no importance, as the numbers will be found to vary individually to some extent.

On outer surface of hindtibia 12 dorso-lateral bristles, all slender, those placed close to the stout dorsal bristles not being stouter than the more lateral ones. First pair of plantar bristles of segment V lateral, but bent inwards in all



tarsi. Hindcoxa, on inner side, with a few bristles near anterior margin, none farther back.

Measurements of tarsi: midtarsus 19, 12, 8, 5½, 13; hindtarsus 42, 25, 12, 9, 15.

Modified Segments: Dorsal margin of tergum VII not projecting backwards; marginal lobe below antepygidial bristles short, broadly rounded. Sternum VII (text-fig. 58) deeply sinuate, the lobe above sinus broad, rounded, the ventral lobe longer, narrower, with two long strong bristles. Above stigma of tergum VIII, each side, about 6 bristles, stigma-cavity large, but not penetrating under the bristles; on widened ventral area 26 (or 28) bristles altogether on outer surface and 3 marginal ones on inner; 2 of the outer bristles at apical margin, which is gently incurved above the upper bristle and twice sinuate below it, the ventral apical angle effaced, not projecting. Anal sternite convex at base, but the projection not abrupt, bearing on the two sides together a dozen bristles, all rather long, and beyond this cluster on a slight prominence a pair of long ones; at apex two pairs. Stylet as long as hindtarsal segment IV. Head of spermatheca (text-fig. 59) more rounded than is usual in *Stivalius*, only

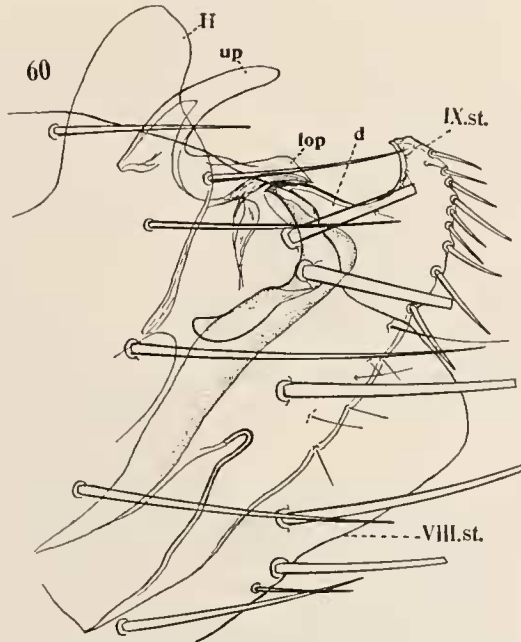
a little longer than broad, with a low, rounded, dorsal hump; tail slightly longer than head.

Length 2.5 mm.; hindfemur 0.43 mm.

7. *Stivalius alticola* sp. nov. (text-figs. 60, 61).

Saiko, Bubu R., 5,500–6,000 ft., ix. x., on black and white *Cuscus*, 4 ♂♂, 3 ♀♀; Bubu R., x., on *Mallomys*, 1 ♀.

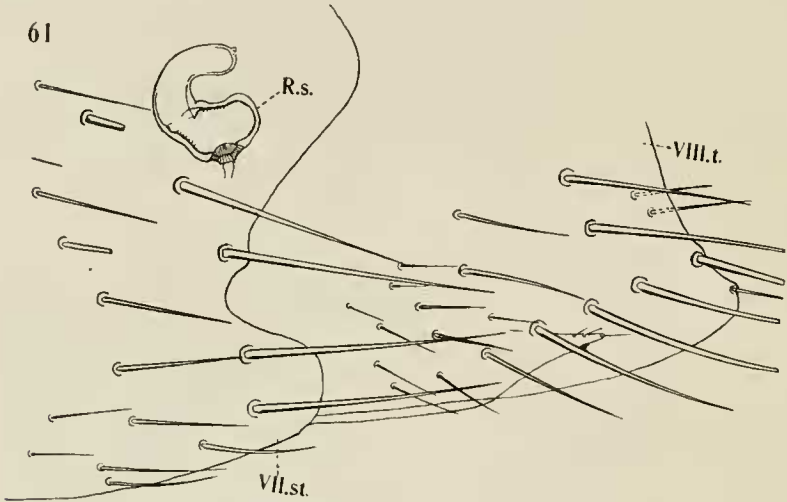
Nearly related to *St. corrugis* Jord. 1933, larger, the bristles somewhat stouter on the whole. The ♂ differs especially in the tail-end: sternum VIII (text-fig. 60) with 34 to 39 bristles, two of the large ones placed close together at or near apical margin; this margin somewhat undulate, variable, ventral apical margin very broadly rounded. Digtoid F (not drawn) similar to that of *St. corrugis*, with the same dorsal corrugation in basal area; with 4 to 6 long ventral bristles in outer half, usually 4, of which the proximal one is smallest; the distal one nearer to apex than in *St. corrugis*. Ventral arm of sternum IX curved up at apex, the tip pointed, at a short distance from apex a large dorsal tooth (d), also pointed and somewhat curved frontad, the sinus between this tooth and apical hook round; along ventral margin in apical fourth 7 to 9 short bristles, most of them rather stout for



their length, the row preceded by some very thin bristles. Apical armature of phallosome also very different from that of *St. corrugis*: dorsal hood (H) broad and obtuse; upper process (up) of paramere long, narrow, curved, finger-like; lower one (lop) variable, more membranous, much shorter than upper process, obliquely truncate, with the lower angle pointed.

♀. This sex not known of *St. corrugis*. In the new species, apical margin of tergum VII as in *St. ancicus* (see above, No. 6) vertical dorsally, not projecting in between the two sets of antepygidial bristles (the original diagnosis of *Stivalius* has to be amended accordingly); below these bristles the margin strongly rounded-slanting. Sternum VII (text-fig. 61) with large sinus, which is strongly rounded at the lowest point, the margin from the bottom of the sinus upwards gradually slanting, sometimes with a small projection as in figure; posterior row of bristles varying from 13 to 17 (two sides together), the bristles in front of row from 26 to 33, in one specimen the number being 40. Ventral apical angle of tergum VIII projecting but rounded off, on inner side of this lobe a slender marginal bristle, two, more rarely three, farther upward; on outer side one or

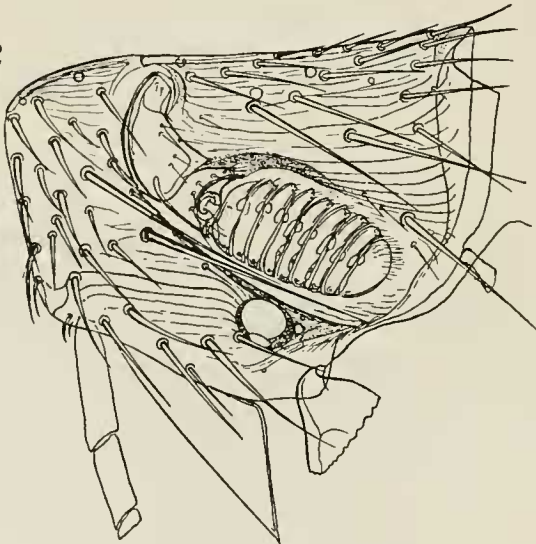
two large marginal bristles above the apical lobe, and from 30 to 45 on the side ; above the stigma from 6 to 13 each side. Anal sternum ventrally strongly humped, the hump bearing each side usually two pairs of bristles, sometimes more ; in the specimen off *Mallomys*, with most bristles on VII. st. and VIII. t.,



there is an isolated pair of bristles in middle on a small hump, one bristle each side. Spermatheca narrowing towards its tail, dorsally very strongly convex in posterior half, here about three times as wide as upper half of tail.

Length : ♂ 3.3-3.6,
♀ 4.0-4.7 mm. ; hind-
femur : ♂ 0.49-0.56, ♀
0.59-0.65 mm.

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8. *Stivalius corrugis*
Jord. 1933.

Saiko, Bubu R., 5,500
ft., ix., on *Rattus*, 1 ♂.

9. *Stivalius rugatus* sp.
nov. (text-figs. 62, 63, 64).

Saiko, Bubu R., 5,500
ft., ix., on Bandicoot, 2
♂♂.

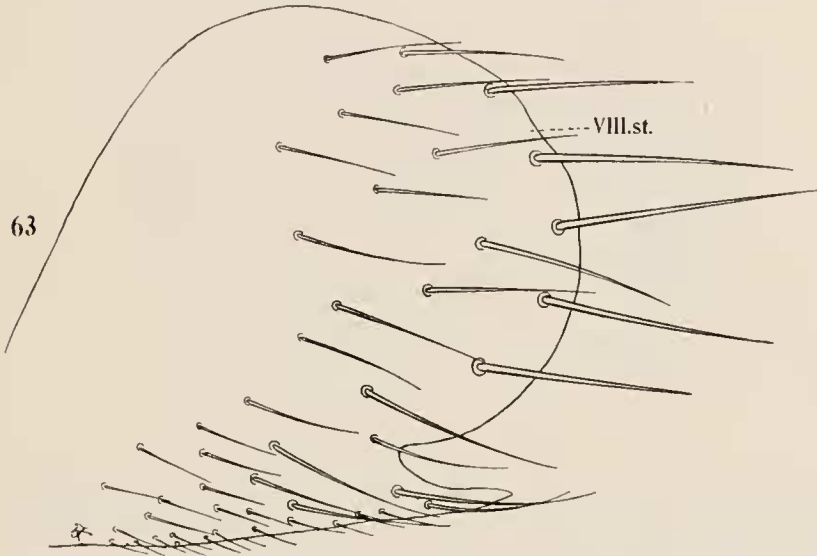
A very distinct
species, with head almost
angulate and bearing
strongly marked hori-
zontal lines, proboscis

short, sternum VIII deeply sinuate, clasper bearing a long narrow process below base of digitoid, etc.

Greater part of frons vertical with a distinct backward slope, dorsal margin more strongly chitinized than anterior margin (text-fig. 62) ; 30 bristles on frons,

one of them close to eye. On occiput three rows and a large bristle between second and third rows. Segment I of maxillary palp one-half longer than II ; measurements : 18, 13, 9, 12. Proboscis reaching to middle of forecoxa, segments II to IV together being only five times as long as broad. Club of antenna nearly twice as long as broad (9 : 5).

On pronotum a posterior row of 11 or 12 bristles and an anterior row of 9 or 11 small ones ; comb containing 18 spines, the lateral ones one-half longer than pronotum measured from base of spines ; propleura strongly striated. Posterior



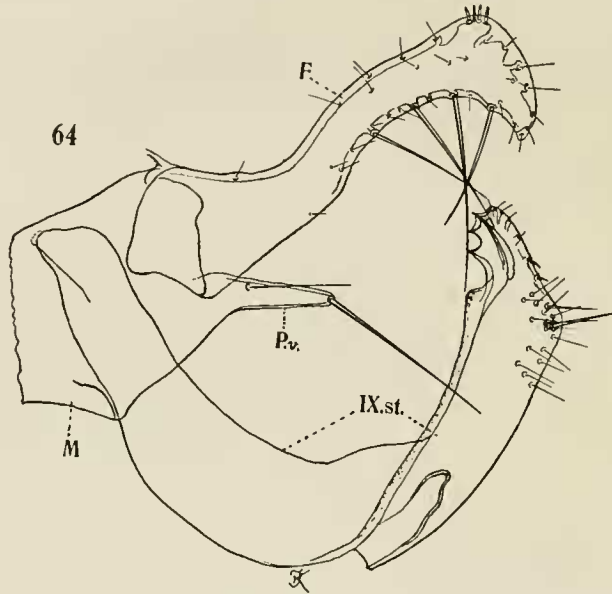
row on meso- and metanotum with 12 bristles ; mesopleura with 9 ; metepimerum with 10 or 11.

Apical spines on abdominal terga I 0, II 2, III 2, IV 2, V 2 ; bristles in type on III 24, 16, IV 26, 16, VII 16, 12, in paratype on III 17, 16, IV 17, 16, VII 12, 13. Bristles on sterna in type on III 13, 6, IV 16, 8, V 16, 7, VI 18, 6, VII 27, 7, in paratype on III 10 ?, 6, IV 15, 6, V 12, 6, VI 14, 6, VII 19, 6 ; *i.e.* type with more small bristles than paratype.

Hindcoxa on innerside with narrow patch of small bristles extending from apex upward-inward. Hindtibia on outer surface with 19 or 21 dorsolateral bristles of nearly equal size (apical ones not included), the bristles near the large dorsal ones not stouter than the other lateral ones. Length of tarsal segments in the two specimens : midtarsus 21 or 22, 16 and 17, 11, 8, 16 and 18 ; hindtarsus 43 and 48, 33, 17, 11, 20.

Modified Segments : stigma of tergum VIII narrow, not penetrating beneath the bristles ; sternum VIII (text-fig. 63) with more than 40 bristles, upper and distal margins strongly rounded together, the outline of the segment not exactly alike in the two specimens ; in both a deep subventral sinus, slightly larger in paratype than in type figured, ventral lobe narrow, pointed in lateral aspect. Digitoid F (text-fig. 64) with very few small bristles in proximal half, apical nose rather strongly curved down, four long bristles at ventral margin, distance of posterior one from tip of nose like diameter of middle of digitoid or a little shorter ; the

ventral process (P.v.) of elasper prolonged, subcylindrical, with a long apical bristle and a shorter and thinner antemedian one. Sternum IX obtusely elbowed beyond two-thirds of ventral margin, bearing at this point a fairly strong bristle which is shorter than the sternum is broad at the elbow, at the proximal and



distal sides of the elbow a number of small bristles; the portion beyond the elbow dorsally quadrisinuate, three small sharp teeth being formed and on the proximal side of the anterior sinus a small rounded hump.

Length: ♂ 2.6–2.8 mm.; hindfemur 0.40–0.43 mm.

Idiochaetis gen. nov.

Close to *Stivalius* J. & R. 1922, differing in the head. Vertical portion of frons with a row of internal incassations, of which at least the upper ones are battledore-shaped; smaller incassations dorsally, more distinct in ♀ than in ♂. A row of modified bristles along dorsal and frontal margins, bottle-shaped, very broad, on an average the enlarged portion of a bristle less than three times as long as broad, all ending with a thin projection (the tip of a normal bristle), which is broken off in some instances, lower bristles less modified than upper ones. Occiput measured horizontally from base of antenna very little longer than frons in ♂, shorter than frons in ♀. Prothorax short, notum with one row of bristles, spines of comb long.—Genotype: sp. nov. here described.

Idiochaetis illustris sp. nov. (text-figs. 65–69).

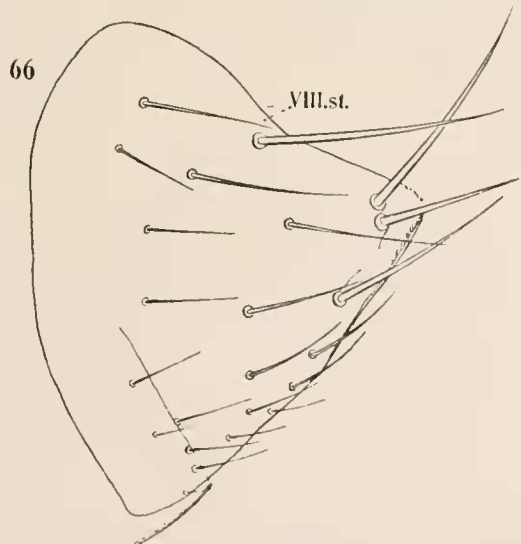
Saiko, Bubu R., 5,500–6,000 ft., ix., on Bandicoot, a small series of both sexes.

In the shape of the head, shortness of proboscis and in the ♂-genitalia resembling *Stivalius rugatus* sp. nov. (No. 9). Bristles numerous and stout on head, forecoxa, meso-metanota. Vertical diameter of head longer than horizontal

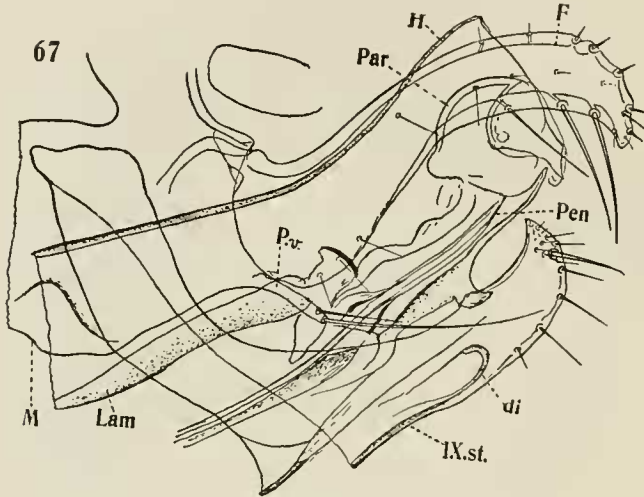
diameter, the difference being especially large in ♀. Fifteen to 17 spiniforms along frontal and dorsal margins ; in some specimens nearly all the frontal incrassations



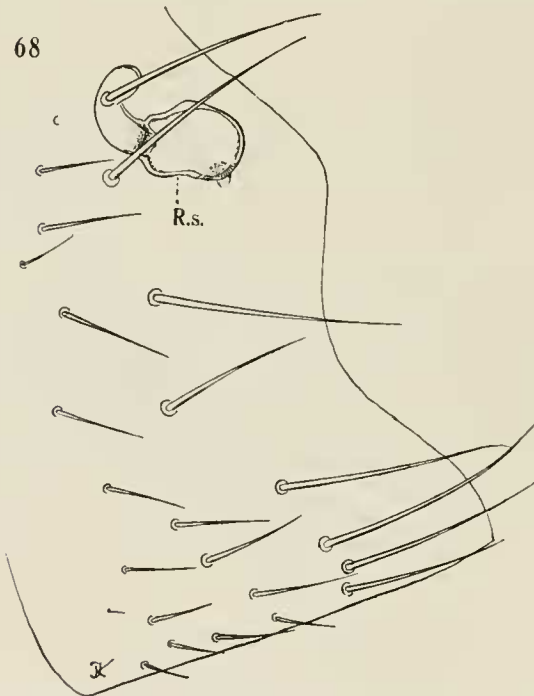
battledore-shaped ; at antennal groove two long stout bristles, between them and ventral margin about 10 or more, of which those in front of and below the eye are more or less shaped like a hock-bottle (some accidentally curved in type, text-fig. 65) ; near the spiniforms a number of small thin bristles, and between these and the bristle at antennal groove a large space without bristles. Occiput with three rows and a large single bristle above middle of antennal groove, the numbers varying individually. Suture from antennal groove to vertex quite distinct in both sexes (in ♀♀ of *Stivalius* more or less feebly indicated). Proboscis short, not reaching to middle of forecoxa, the labial palpus consisting of five segments. Segment I of maxillary palpus longer than II, bristles of both stout. Antenna much shorter in ♀ than in ♂, club in ♂ one-half, in ♀ one-sixth, longer than broad,



Pronotal comb with 18 spines, which are round at apex and more than twice as long as pronotum ; 11 or 12 large bristles, lower ones nearer to anterior



margin than to spines. Mesonotum covered with bristles from posterior row of 12 or 13 to basal margin ; on mesopleura ♂ 17 or 18, ♀ 15 to 25 bristles ; on metanotum from posterior row of 11 or 12 to near base over 40 bristles ; on metepimerum in ♂ 11 to 15, in ♀ 12 to 18.



Abdomen : on terga II to IV (two sides together) two apical spines each, sometimes one missing on III or IV, rarely both on IV ; in front of posterior row of bristles in ♂ one row of small ones and at most a few additional dorsal bristles, in ♀ one or two rows of small ones and additional bristles ; in ♂ two bristles of posterior row below stigma on III to V, in ♀ three or four ; number of bristles on some terga : ♂ on III 15 to 17, 16, IV 13 to 16, 16, VI 10 to 13, 13 to 16, VII 10 to

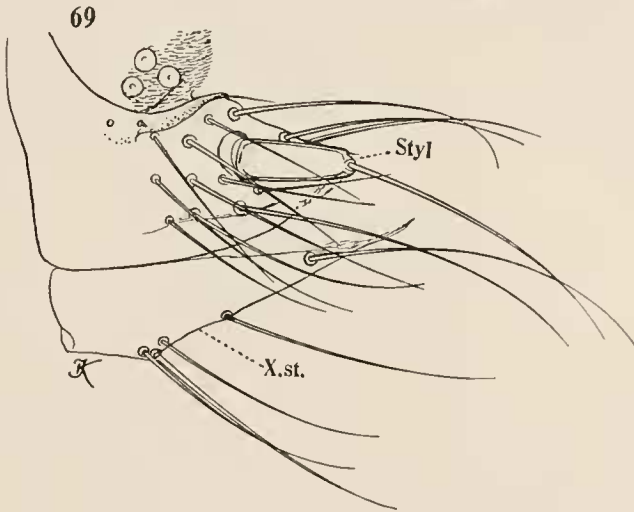
13, 12 ; in ♀ on III 26 to 36, 18 to 21, IV 25 to 33, 18 to 21, VI 21 to 36, 17 or 18, VII 23 to 37, 9 to 11. On sterna : in ♂ on III 7 or 8, 7 or 8, IV 8 to 10 7 or 8, V 5 or 6, 8, VI 6 or 7, 6 to 8, VII 7 to 12, 8 ; in ♀ on III 13 to 15, 10 or 11, IV

11 to 15, 10 to 12, V 9 to 14, 9 to 11, VI 8 to 19, 10 to 12, VII 24 to 32, 14 or 15. Apical margin of tergum VII dorsally projecting in between the two sets of antepygial bristles. Length of segments in

	I.	II.	III.	IV.	V.
Midtarsus	♂ 17 or 18	12 or 13	9	6	17
„	♀ 19 to 21	13 to 15	9 or 10	7 or 8	18 to 20
Hindtarsus	♂ 37 to 39	22 or 23	12	8 to 10	18 or 19
„	♀ 41 to 43	25 to 27	12 or 13	9 or 10	19 or 20
„	large ♀ 52	32	15	10	23 (midtarsus broken).

On outer surface of hindtibia 15 or 16 dorsolateral bristles, one or two of those near the dorsal pairs very slightly stouter than the others.

Modified Segments.—♂. Stigma-cavity of tergum VIII narrow, not extending underneath the row of short bristles. Sternum VIII (text-fig. 66) with 24 to 26 bristles each side, two near rounded apical angle close together. Clasper (text-fig. 67) with long ventral process (P.v.) as in *Stivalius rugatus*; digitoid F



gradually curved and distally gradually narrowed; at ventral margin three long bristles, distance of distal one from apex much shorter than width of F in middle, dorsally at highest point of curvature two small pale spiniforms, a third farther distal, these three corresponding to the cluster of three usually found in *Stivalius*; hardly any bristles in proximal half of F. Horizontal arm of sternum IX gradually turned up at apex, which is sharply pointed, along ventral margin about eight bristles, of which one a short distance from apex is the largest; division of right and left half of sternum halfway to apex as indicated by the line marked di. Hood of phallosome with almost straight distal (vertical) margin (II); upper portion of paramere (Par) claw-like; below orifice of penis-tube (Pen) a longish, sharp, triangular projection directed straight backwards.

♀. Margin of tergum VIII very slightly projecting immediately below antepygial bristles, rounded, not forming a conspicuous lobe. Sternum VII (text-fig. 68) broadly and shallowly incurved, the ventral lobe more projecting than

the upper one, which is broad and short. Stigma of tergum VIII as in ♂; 7 to 14 dorsal bristles, one of them below stigma; on widened lower area of VIII. t. with 35 to 50 bristles on outside, and two strong submarginal bristles and a thinner marginal one on inside. Ventral margin of anal sternite (text-fig. 69) straight, slightly convex near base, with 6 to 8 bristles in proximal half (two sides together) and an apical pair. Stylet (Styl) cylindrical, thrice as long as broad, shorter than segment V of hindtarsus is broad in middle. Head of spermatheca (R.s.) longer than broad, almost symmetrical, with a low dorsal swelling in middle.

Length: ♂ 2.3-2.4, ♀ 2.5-3.3 mm.; hindfemur: ♂ 0.37-0.40, ♀ 0.40-0.53 mm.
